

record of travel in the Cordillera, even upon the beaten tracks.

A short general introduction gives some account of the Andes as a whole, with remarks on the characteristic scenery, on the roads, the methods of travelling, and a few pages on the vegetation. Then follows the description of a series of four journeys through different parts of highland Peru, with observations drawn from official sources regarding some places not personally visited, such as the Amazon territories and the Bolivian coasts of Lake Titicaca. The first journey led over the Cordillera Negra and the Cordillera Blanca in Central Peru to Huanuco and the famous mining town of Cerro de Pasco, 4350 metres in elevation, with great silver-mines tunnelled into the mountains. The best room of the best hotel in this loftiest town in the world was found in such a condition that Dr. Middendorf could not say whether its floor was of tiles, mud, or boards, and he hailed the invitation of the Scotch engineer in charge of the mines as a happy deliverance.

The second journey was in the northern part of the republic, from the seaport of Pacasmayo by Cajamarca to the Marañon valley and Chachapoyas, returning across the Cordillera by Huanachuco to Trujilla. A short account of the Amazon province of Loreto is added, and an historical narrative of the discovery and exploration of the Amazon.

The third journey was a visit to the great plateau-lake of Titicaca, with many particulars regarding the ancient ruins of the Inca time. The concluding section, on the mountains of Southern Peru, describes the return journey down the long valley to Cuzco, and thence over the Cordillera past Ayacucho to Lima.

Throughout the work there are happy descriptions of the native peoples, the scenery, and the incidents of the journey. Dr. Middendorf seems to have paid considerable attention to linguistic studies, and also to the architecture of the ancient ruins. He especially remarks the contrast between the mud-huts, or dwellings built of sun-dried bricks, which characterise the arid coast-strip, and the megalithic masonry of the lofty plateaus and high mountain valleys.

The illustrations throughout are extremely well chosen, really illustrative of the natural features of the great Cordillera, and they are numerous enough to satisfy the most exacting. An index to all three volumes completes the work.

SEKIYA SEIKEI.

ALL students of seismology and vulcanology will learn with regret that Prof. Sekiya has passed from amongst us. He was born towards the end of 1855, a year well remembered by the inhabitants of Yedo as that of the great earthquake. In 1876, whilst on a visit to England to complete his studies as a mechanical engineer, he fell a victim to consumption, the symptoms of which gradually grew more and more severe until January 9 of this year, when they culminated in his death.

After acting as assistant to Prof. J. A. Ewing, in 1886 he was appointed to the newly-created chair of Seismology at the Imperial University of Japan.

A lasting testimony to his ingenuity and perseverance, which is to be seen in many museums, is a model illustrating the path followed by an earth particle at the time of an earthquake. Although he wrote much in Japanese, he contributed many valuable papers and memoirs in English or French to the journal issued by his own college, to the *Transactions* of the Seismological Society, and to other periodicals.

The impetus he gave to seismology by the enlargement of the University Laboratory, the establishment of

instruments throughout Japan, and to the extension of the seismic survey of that country, which now boasts of 968 stations, is well known to his colleagues and acquaintances. Sekiya was a kind and sincere friend, and his honesty and unflinching straightforwardness of speech were a by-word amongst all who knew him. J. M.

NOTES.

PROF. J. J. SYLVESTER, F.R.S., has, with the approval of his Majesty the King of Italy, been elected a Foreign Member of the Royal Academy of Sciences of Turin.

A NUMBER of admirers of Prof. Mittag-Leffler, the founder of the *Acta Mathematica*, will shortly present him with a congratulatory address, written in four languages—German, French, Italian, and English—and expressing the appreciation of mathematicians of the services he has rendered to their science. It is proposed to present him at the same time with his portrait in oils, and a subscription list has been opened to obtain funds for that purpose. Prof. Appell, 6 rue Le Verrier, Paris, will be glad to receive subscriptions.

SIR J. RUSSELL REYNOLDS has expressed his intention to retire shortly from the Presidency of the Royal College of Physicians.

THE Chairman of the Local Committee for the Toronto meeting of the British Association for the Advancement of Science is Dr. A. B. Macallum.

AT the ordinary meeting of the Royal Meteorological Society, on Wednesday next, a lecture will be given by Mr. Frederic Gaster, on "Weather Forecasts and Storm Warnings, how they are prepared and made known."

A LIVE gorilla, said to be the largest ever imported into this country, has just been received at the Zoological Gardens, Regent's Park. The animal comes from near Ngove or Iquela, on the French Congo, and is in excellent health.

THE De Morgan medal, which is given triennially by the London Mathematical Society, will be awarded in June next, and nominations may be made at either the March or April meetings of the Society. Prof. Klein, of Göttingen, editor of the *Mathematische Annalen*, was the last recipient.

THE Paris correspondent of the *Times* states that a tablet commemorating Franklin's residence at Passy, then a village outside Paris, was unveiled on Sunday in the wall of the Christian Brothers' School, Rue Raynouard. M. Faye, of the Academy of Sciences, and M. Guillois, a local antiquary, delivered addresses.

SIR W. M. CONWAY proposes to take a party to Spitzbergen next summer, for the purpose of exploring the interior. He expects to be accompanied by Mr. Trevor-Battye, and by four others, all of them scientific experts in different branches, so that the journey may result in valuable increase to scientific knowledge.

WE regret to announce the deaths of Mr. James Abernethy, past-President of the Institution of Civil Engineers, and a Fellow of the Royal Society of Edinburgh; Dr. Alfred D. Kennedy, a distinguished chemist and toxicologist, of Philadelphia; Dr. H. Ernest Goodman, Professor of Surgery in the Medico-Chirurgical College, Philadelphia; Dr. R. M. Hodges, Professor of Surgery at Harvard; and Christophe Negri, the Italian economist and geographer.

THE second International Horticultural Exhibition will be held at Dresden, from May 2 to 10 next, under the patronage of

the King of Saxony. Prizes will be awarded for exhibits of flowers and plants, cut flowers, arrangements of flowers for decorative purposes, plans of gardens and greenhouses, garden buildings, heating appliances, and other horticultural requisites. Applications for space to exhibit flowers and fruit, as well as for forms of entry and programmes of the exhibition, must be made, not later than April 10, to the "Geschäftsamt der II. Internationalen Gartenbau-Ausstellung, Dresden."

HERR ANDRÉE'S balloon for his polar expedition is taking shape. The upper half is already sewn together, and the parts of the lower half are cut out. The Société Nordenfält, who desired that this trust might be given to them, are superintending and controlling the work on the balloon. Arrangements have been made with the builder, Mr. F. O. Peterson, in Gothenburg, to construct a balloon house, to be ready by May 25, and two competent men, who are assisting in the construction, will go to Spitzbergen to erect the house. The *Virgo*, the steamer in which the aeronauts will set out for Spitzbergen, will carry about thirty-five tons of sulphuric acid to generate the hydrogen. Great interest is felt in the enterprise all over Sweden.

IN the House of Commons on Tuesday, for the first time since the question of the opening of museums and galleries was raised in Parliament, a majority was obtained in its favour. Mr. Massey-Mainwaring's motion was:—"That, in the opinion of this House, it is desirable that the national museums and art galleries in London should be open for a limited number of hours on Sundays, after 2 p.m., upon condition that no officer shall be required to attend on more than six days per week, and that any who may have conscientious objections shall be exempt from Sunday duty." On a division, an amendment to the resolution was rejected by 178 votes against 93, and the resolution was then agreed to. It only remains now for the Government, and the Trustees of the British Museum, to put the resolution into effect.

THE Lord Mayor presided on Friday, at the Mansion House, over a meeting held for the purpose of discussing the arrangements for the International Horse and Horseless Carriage and Roads Locomotion Exhibition, which it is proposed to open at the Crystal Palace in May next. Mr. A. Sennett was elected honorary executive commissioner, and executive committees for horse-drawn and mechanically-propelled vehicles respectively were appointed, the members including Sir Frederick Bramwell, Sir Douglas Galton, Sir H. Trueman Wood, Prof. Boys, Sir David Salomons, Mr. G. N. Hooper, Mr. Jacobs, Mr. W. Warby Beaumont, and Mr. E. Macrory, Q.C. It was announced by Sir David Salomons, who occupied the chair during the latter part of the proceedings, that Lord Kelvin had consented to join the honorary Council.

WE learn through the *Engineer* that the management of the *Cosmopolitan*, a monthly magazine, is offering £600 in premiums to be awarded to horseless carriages presenting the greatest number of points of excellence, as exhibited in a trial trip to be made on May 30. This trip will be from the City Hall Park, in New York, to Irvington and back, a total distance of 52 miles. The award will be made upon the following points, the maximum aggregate being 100:—Speed, 50; simplicity and durability of construction, 25; ease in operating, and safety, 15; cost, 10. The route will be along Broadway, through Central Park and over the Washington Bridge, thence along the main road to Yonkers, where the course will include five miles of asphalt paving, and then on to Irvington, on the Hudson River, 26 miles. There is a good road for the entire distance.

A BRIGHT aurora was seen at Worcester and other places on Wednesday, March 4. Mr. Lloyd Bozward says that at 7.30 on that evening "a remarkable beam of white light of dazzling

brilliance, far exceeding anything of the kind of recent years, arose from a point in the north-west, extending to the zenith, and spreading out fan-like in rising. So rare have been the appearances of the aurora here of late, and so startling the radiant effulgence, that many persons attributed the beam to the effect of an electric search-light."

A DISCOVERY of much interest has, says *Science*, recently been made in Western Kansas of an extinct species of Bison, the skull having an expanse of nearly four feet. Embedded below the humerus of the skeleton was a small but perfectly formed arrow-head. The Bison has not yet been identified with certainty, but seems closely allied to *B. antiquus*, though evidently larger. The formation is apparently the same as that which yielded the skeletons of *Platygonus*, recently obtained by the University of Kansas. The Bison skeleton, that of a bull, will shortly be mounted in the University museum.

THOUGH the coral rock in the northern part of the island of Ceylon has long been used in many departments of building, the *Ceylon Observer* thinks that builders do not avail themselves of the material so fully as they might. The stone is admirably suited by its lightness and toughness of texture for use as arch stones, being very readily shaped by an ordinary saw. Several long arched bridges have been built with it in the Jaffna Peninsula, and have proved its great durability as a building stone. It has also been applied to ornamental uses, the dressings and Gothic windows of St. John's Church at Chundikuli having been constructed of it. Cut into slabs, it has furnished the covering for nearly all the road drainage of the same locality. It is suggested that much employment could be economically found for this rock in the southern districts of Ceylon, its extreme lightness favouring the cost of freightage.

THE effect of African grass-fires in changing the aspect of the vegetation, forms the subject of a short paper by Mr. Scott-Elliot in the current number of *Science Progress*. Owing to the annual clearing of the ground by these fires, there is no accumulation of leaf-mould and stems, and the soil therefore never becomes improved. The season of flowering for many trees and herbaceous plants is completely altered, a large number of the latter sending up flowering stems, entirely without leaves, after the first shower of the rainy season; and the stems only begin to produce leaves when the rains have well set in. Another curious effect of the fires is the manner in which trees are either kept down or obliged to protect themselves in some way against their action. Of the trees which do manage to exist in spite of the annual conflagration, the most remarkable are the tree *Euphorbias*, which seem to come out of the most violent fire with only a few scorched branches. Mr. Scott-Elliot brought home with him several specimens of the bark of the six or seven forms of trees which manage to survive the ordeal by fire, and an examination of them led Prof. Farmer to conclude "they all agree in possessing cells which show a certain amount of gummy degeneration of the cells in the bark, together with the presence of a considerable amount of sclerotic cells; it seems not impossible that these two facts may be connected with the resistance of the plants to the fires."

AN ambitious scheme, but, at the same time, one which deserves the careful consideration and full support of all British geographers, was laid before a technical meeting of the Royal Geographical Society, held last Friday, by Dr. H. R. Mill. Dr. Mill proposes that a complete geographical description of the British Islands should be prepared from existing data, supplemented to a small extent by new researches and by the collection of unpublished information. This should be done on a uniform scale for every small selected unit of the country; then combined into a series of regional memoirs dealing with natural

districts; and ultimately the whole would be generalised into one memoir on the whole country, the result of a series of generalisations carried out much in the same way as the various maps of the Ordnance Survey are obtained by successive generalisations from the largest scale produced. The chief sources of information would be the topographical map of the Ordnance Survey, the maps of the Geological Survey, the charts of the Hydrographic Department, the publications of the Meteorological Office, the Census reports, the reports of the Board of Trade and other Government departments, the publications of such societies as the Royal Agricultural, the Archæological, the Statistical, the Institution of Civil Engineers, and many others, and the pictures of amateur photographic societies. Dr. Mill explained in detail the plan of the proposed memoir, and the method in which it should be carried out. After a discussion, Mr. Clements Markham, who occupied the chair, said he should certainly recommend to the Council that the memoir be prepared under the Society's auspices. The practical problem of expense has, however, to be solved before the plan can be developed.

AN important contribution to the knowledge of the origin and movement of sand, shingle, and alluvial matter around our coasts, was made by Mr. W. H. Wheeler at the meeting of the Institution of Civil Engineers last week. It appears that the generally accepted theory, that the travel of drift along a coast is due to and is in the direction of the prevailing wind, is contrary to fact. In England the prevailing winds are from the south-west; whereas the travel of drift on the east coast is southward, on the south coast from the westward, and on the west coast northward, in each case being in the same direction as the flood tide. Mr. Wheeler has been unable to find a single instance where the regular and continuous travel of drift along a coast is in the opposite direction to that of the flood tide. While winds and waves are the agents which operate in eroding cliffs and producing the supply of drift, the continuous progressive movement of sand and shingle along the sea coast is caused by the wave action of the flood tide, which is increased when the wind blows in the same direction as the flood tide. With regard to alluvial matter in estuaries, this is derived from detritus brought down by rivers, and does not come from the sea, nor is it supplied from the waste of clay or chalk cliffs along the sea coast. The only current along the coasts of England which can transport material in suspension is that due to the tidal wave, which travels each way for about six hours at the rate of between 2 knots and $2\frac{1}{2}$ knots. It is known that the material in suspension is not carried upwards for any great distance above the mouth of a river or estuary. The tidal wave propagated up a river creates only an oscillating current, and the same quantity of tidal water which goes up returns on the ebb, with the addition of the current produced by the fresh water; the tendency of movement is, therefore, downward, and not upward. Mr. Wheeler applied these and other facts to determining the principles which are essential in the construction of harbours on shingly or sandy coasts.

THE current number of the *Comptes rendus* (March 2) contains a paper by M. Henri Becquerel, on some invisible radiation emitted by phosphorescent bodies. In some previous experiments the author has shown that phosphorescent bodies give out radiation which is capable of traversing bodies which are opaque to ordinary light rays. The great interest at present shown in this subject has induced him to give an account of a number of recent experiments. The phosphorescent bodies employed have been crystals of the double sulphate of uranium and potassium. The phosphorescence of this body is very marked, but only lasts, as far as the rays which affect the eye are concerned, at any rate, for less than one-hundredth of a second. It can easily be shown that the rays emitted by this body when

exposed to diffused daylight or to direct sunlight are capable of traversing not only black paper, but also aluminium and thin sheets of copper. For if an ordinary dry photographic plate, enclosed in a tin-plate slide with an aluminium window, is exposed to sunlight even for a whole day, the plate is unaffected. If, however, a crystal of the uranium salt is placed on the aluminium window, and the whole is exposed to sunlight for a few hours, then on developing the plate a shadow of the crystal will appear in black. If a thin plate of copper, cut into the form of a cross, is placed between the crystal and the aluminium window, a clear image of this cross is formed on the plate. The curious result has, however, been obtained that although the plate-holder and the uranium salt are not exposed to the light, but kept inside a wooden or cardboard box, the photographic plate shows the same images as when the salt is exposed to light. The author rather tentatively suggests that the uranium salt may continue to emit by phosphorescence radiation that is invisible to the eye, but which is capable of traversing paper and aluminium for a time infinitely great compared with the time during which it continues to emit visible rays.

THE February number of the *Journal de Physique* contains a paper, by M. C. Limb, on the determination of the electromotive force of a Clark cell in absolute measure. Instead of adopting the usual method, which is to compare the difference of potential at the ends of a known resistance when traversed by a known current with that of the cell, the author has adopted a novel method which is independent of the units of current and resistance. A magnet is rotated inside a long helix about an axis perpendicular both to its own magnetic axis and the axis of the coil. The magnetic moment of the magnet is determined by Gauss's method. If H is the field which would be produced at the centre of the long coil if the spirals were traversed by unit current, ω the angular velocity of the magnet and M its magnetic moment, then the maximum value of the electromotive force induced in the coil will be $HM\omega$. A correction has to be applied on account of the finite length of the coil which involves the distance between the poles of the magnet. The angular velocity is measured by simultaneously registering the turns made by the magnet and the beats of a seconds pendulum, the velocity being maintained constant by a specially designed tachymeter. By means of a commutator fixed to the axle of the magnet, the circuit of the coil is only closed at the moment when the induced electromotive force is a maximum. This maximum electromotive force is compared with that of the cell by means of a modified form of Clark potentiometer, a Lippmann capillary electrometer being employed to indicate when the balance is secured. This electrometer is capable of indicating a difference of potential of 0.00005 volt. The Clark cell was of the H pattern, and the author gives as his final result for the electromotive force of this form of cell at 0° C. the number 1.4535. The number obtained by Lord Rayleigh was 1.4527 volts.

THE habit of opium-smoking forms the subject of a paper, by M. H. Moissan, in the *Annales de Chimie et Physique*. M. Moissan finds that the Chinese do not smoke crude opium, but a preparation of it called *Chandu*, which, when heated to about 250° produces a smoke formed of volatile perfumes and a small quantity of morphine; this appears to produce no more ill-effects than tobacco-smoking. The commercial quality of opium, however, is very different; the residues that remain after opium-smoking are sold as dross, and when this is treated to a temperature of 300° to 325° various toxic compounds are given off.

WE have received, from Mr. E. Kayser, a pamphlet containing a considerable number of measurements of cloud-heights taken at Dantzic last summer. The observations were taken

by various kinds of instruments, but the principle was the same throughout—viz. two corresponding stations of known base were selected, and the apparatus directed at the same instant on the same point of the sky. A full description of the instruments and method is given in the text, and printed in vol. ix. of the *Schriften* of the Dantzig Philosophical Society. The publication of the work is timely, as on May 1 next a year of special cloud observation in all parts of the world is to commence, under the auspices of the International Meteorological Committee. The pamphlet contains much useful information for intending observers.

THE *Verhandlungen* of the German Geographical Society (No. 1, 1896) contain a lecture, by Mr. A. Berson, on the use of balloons for geographical purposes. As Mr. Berson has made many ascents, both in free and captive balloons, in connection with the Berlin Meteorological Office and other German institutions, his remarks possess considerable interest. He refers to the importance of captive balloons in voyages and in Arctic expeditions, and regrets that Dr. Nansen did not take one with him as he originally intended. He strongly condemns the proposal to use a free balloon in the Andrée polar expedition, and thinks it must certainly end in disaster. Mr. Berson found during his ascents that in all types of weather, and at all seasons, the temperature at great heights decreases more rapidly, or at least as quickly, as in lower altitudes, and that at a height of over 5000 metres much lower temperatures exist than those assumed after Mr. Glaisher's ascents. Also that the increase of wind velocity is much greater than was supposed; in one ascent, when the wind velocity was only about seven miles an hour at a height of between 1000 and 3000 metres, it reached thirty-seven miles an hour, between 4000 and 6000 metres. A preponderance of winds with westerly components was also observed in great altitudes, as is shown by cloud observations made at the earth's surface.

DR. C. SAPPER has studied the customs and religious views of the Kekchi Indians of Guatemala (*Internat. Arch. f. Ethnogr.*, viii. p. 195), and it is interesting to trace the Pagan-Christian overlap in the religion of these professed Roman Catholics. They will not worship in a church out of their own district, as they believe that the god of that church cannot understand them; indeed, when they go to neighbouring places, they renounce all religious exercises. Crosses are erected on mountain-passes by all the Maya Indians, and a native on first crossing a pass puts a stone at the foot of a cross, and often offers flowers and incense, and sometimes he will dance before it. If there is no cross on a pass, the Kekchi Indian prays and brings offerings to the heathen god. In order to make green parrots tender—for they are very tough—the natives put them in a hammock before cooking, and rock them, whistling to them, as if they were sleepy children. Money presents, formerly to the value of 2½ dollars, were paid by the bridegroom's father to the bride's father, but the price has now risen to 7 dollars. A girl can have a husband bought for her, but it is more expensive, as he costs 10 dollars.

IN the same journal (p. 215), Dr. J. Walter Fewkes gives a "Provisional List of Annual Ceremonies at Walpi," his idea being to bring together in proper sequence the prescribed yearly observances of the Tusayan Indians. It appears that the dates for the various festivals and ceremonies were fixed by the extreme summer and winter solstitial points of risings and settings, and by certain hillocks, notches, or trees on the horizon. When the sun appears to rise or set behind recognised definite points on the horizon, certain religious ceremonies are announced, and secular occupations, as that of planting, initiated. The author briefly describes the various annual ceremonies, the period of their commencing, and their duration. It will be

evident that this is an important paper, as it coordinates previous observations.

UNTIL Busse last year proclaimed the existence of a species of yeast possessing pathogenic properties, this class of microbes had escaped all imputation as regards disease-producing characteristics. Busse's researches have been followed up by others from Colpe, and Sanfelice, but the latest contribution to the subject has been received from Dr. Lydia Rabinowitsch, who has worked at it under the superintendence of Dr. Robert Koch at Berlin. Fifty different varieties of yeast were collected, and out of these, seven were found possessing pathogenic properties. These yeasts appear to be distinct from those pathogenic varieties isolated by other observers. Amongst them is *Monilia candida*, a yeast already investigated by Jörgensen, and of considerable interest on account of its remarkable fermentative properties, but which Dr. Rabinowitsch found was fatal to both rabbits and mice, although guinea-pigs were in no way affected by it. Another yeast, pathogenic to mice, was obtained from some figs which had been allowed to ferment, whilst a so-called "wild" yeast, found on grapes, killed both rabbits and mice. A variety of yeast isolated by Prof. Delbrück from ale, and sent from America, was also found to be fatal to rabbits in from nine to ten days, and to mice in from four to six days when subcutaneously introduced. The fact that these pathogenic yeast cells were usually found abundantly present in the blood, and in the various organs of the animals' bodies, justifies, says Dr. Rabinowitsch, the assumption that the effect produced by them was not due to intoxication from the products elaborated by them, but to direct infection through their copious multiplication within the animals' system. Sanfelice's observation that the yeast cells presented a different appearance when taken from artificial cultures, and from the bodies of animals respectively, was not confirmed by Dr. Rabinowitsch, who could detect no difference.

AMONG the excursions which the Geologists' Association are arranging for the coming season, the farthest afield are those to the Dorsetshire coast (Easter), Chippenham and Calne (Whitsuntide), Ipswich, the new railway at Catesby (Northants), and West Somerset and North Devon (in July). Nearer town, Galley Hill (Kent), Hendon, Leith Hill, Chingford, Reading, Hitchin, and High Barnet will be visited.

THE present volume (vol. xiv.) of the *Proceedings* of the Geologists' Association will be largely devoted to Indian geology. The two presidential addresses of the late President, Lieut.-General C. A. McMahon—the first published in the number for May 1895, the second not yet published—deal with the Himalayas. The February number, which has only just been issued, contains a paper, by W. H. Hudleston, on the geology of India in general, with special notes on a journey from Bombay to Kashmir. The first part gives an excellent summary of the geology of India, illustrated by a coloured map; while a number of sections accompany the second part.

THE monthly notes on Petrography, contributed by Dr. W. S. Bayley to the *American Naturalist* for 1895, have been reprinted and issued together as a "Summary of Progress in Petrography," which should be welcomed by those who are unable to keep themselves abreast of the rapid increase of knowledge in this department. A subject- and an author-index are added. As the author omits his own papers, with one exception, from the list, we may add that his researches on the Basic Massive Rocks of the Lake Superior region, published in the *Chicago Journal of Geology*, should not be overlooked by students of Petrography.

AN order has been made by the Home Secretary, which prohibits the taking or destroying of the eggs of the following species of wild birds throughout the administrative county of Durham:—

Blackheaded gull, common buzzard, kestrel, merlin, owls (all species), bittern, curlew, dipper, dotterel, dunlin, golden plover, goldfinch, heron, hawfinch, kingfisher, martins (all species), nightjar, nuthatch, pied flycatcher, peregrine falcon, raven, ring ouzel, snipe, swallow, treecreeper, water rail, wagtails, woodpeckers (all species), woodcock. It is also ordered that the Wild Birds Protection Act, 1880, shall apply throughout the county of Durham to the following species of wild birds:—Bearded tit, buzzards (all species), hobby, kestrel, martins (all species), merlin, osprey, peregrine falcon, swallow, swift, wry-neck.

IN the *Entomologist's Monthly Magazine* for March, Dr. T. A. Chapman records an experiment on the artificial prolongation of the larval stage in Lepidoptera, which, although brief and incomplete, indicates an important line of research in connection with metamorphosis. Caterpillars of *Agrotis comes*, on reaching the last normal stadium, were starved so as to delay growth, and after six weeks were then placed on abundant diet. Some died, several turned normally to pupæ, and others endeavoured to prolong the larval condition. Two alone succeeded, and assumed a further larval instar, accompanied by modifications in the antennæ, maxillæ, legs and eyes. Those which failed were shown by dissection to be endeavouring to accomplish similar changes. In this way an aberrant larva, with certain pupal or imaginal characteristics, was obtained. These experiments have some analogy with the production by Grassi of intermediates between the normal forms found in a nest of Termites, and perhaps with certain phenomena of hypermetamorphosis. Further and more complete experiments will be awaited with interest.

CREMATION as a means of disposal of the dead is steadily gaining favour. From the report of the Council of the Cremation Society for 1895, we see that 150 cremations were carried out at Woking during the year, and fifty-eight at Manchester. When the Society commenced operations in 1885, only three bodies were cremated, but this number has continuously increased since that year. At the present time, the crematorium at Manchester is the only one in operation in England besides the one at Woking. Another is, however, being erected near Liverpool, and will shortly be opened for use; and last November, a building, comprising a crematorium, chapel, and waiting-rooms, situated on the outskirts of Glasgow, was opened by Sir Charles Cameron.

WE have on our table the sixth edition of M. P. Schützenberger's well-known work on "Les Fermentations," published by M. Félix Alcan in the comprehensive Bibliothèque Scientifique Internationale. The whole of the text has been revised, and numerous additions have been made. The "Résultats de l'examen de dix mille observations de hernies," communicated to the last French Congress of Surgery, by Prof. Paul Berger, has been published in volume form by M. Félix Alcan. Mr. Ernest Hart's criticism of "Hypnotism, Mesmerism, and the New Witchcraft" (Smith, Elder, and Co.) has blossomed into a second edition. A chapter has been added, embodying the confessions of a professional medium, and some new matter has been placed in an appendix, but no other changes have been made.

A NEW monthly magazine—the *Ornithologist*, edited by Mr. H. K. Swann—has just appeared, its claim to distinction among the periodical literature of natural history being that it is the only monthly journal of ornithology published in the British Islands, though there are several which devote a large share of their space to the subject. The first number of the new publication contains, among other contributions, notes on birds seen during a continental tour, by Mr. O. V. Alpin, notes on the

nesting habits of the oyster-catcher, by Mr. F. B. Whitlock, and on British birds at Wiesbaden, by Mr. Graham W. Kerr. There is also a full-page plate showing the nest of a wheat-ear, built in an old tin can, and a portrait of the late Mr. Seebohm. We welcome this addition to the ranks of scientific journals, and hope that it will long live to encourage observation and research.

THE recent discovery of argon in atmospheric air, by Lord Rayleigh and Prof. Ramsay, aroused such great interest, that it has been resolved, on the repeated request of the "general public," to prepare a volume containing an account of the methods of extracting the new gas from air, and of its properties, explaining, where necessary, in popular language, the basis of the reasoning employed in drawing conclusions relative to argon. But the whole history of the determination of the gases in air is so closely related to this recent discovery, that it would hardly have been possible to present the subject in its entirety without a preliminary sketch of the discoverers and their work. The little work, which has been written by Prof. Ramsay, and will be published by Messrs. Macmillan and Co., therefore treats of all the progress made in this fascinating branch of chemistry by a number of men, almost all of them English. In this sense, England may be said to "rule the air," as in another she rules the sea. The volume will contain portraits of Cavendish, Boyle, Lavoisier, and other early discoverers.

THE additions to the Zoological Society's Gardens during the past week include a Hairy Armadillo (*Dasyurus villosus*) from La Plata, presented by Mr. A. H. Robinson; two Fennec Foxes (*Canis cerdo*) from Egypt, presented by Mr. Dixon Bey; a Pale Genet (*Genetta senegalensis*), two Home's Cinixys (*Cinixys homeana*), an Eroded Cinixys (*Cinixys erosa*), a Delalande's Gecko (*Tarentola delalandii*) from West Africa, presented by Mr. W. H. Boyle; a Lesser Kestrel (*Tinnunculus cenchris*) captured at sea, presented by Mr. A. J. Leith; a Greater Black-backed Gull (*Larus Marinus*), British, presented by Mr. G. Smith; one Slender-billed Cockatoo (*Nymphicus tenuirostris*) from Australia, presented by Mr. John J. Sapp; a Laughing Kingfisher (*Dacelo gigantea*) from Australia, presented by Mrs. Hillier; a Hawfinch (*Coccothraustes vulgaris*), British, presented by Mr. C. Bates; two Black Swans (*Cygnus atratus*, ♂ ♀) from Australia, purchased; a Gorilla (*Anthropopithecus gorilla*, ♀) from Naove or Iquela Congo Français, four Short-Death Adders (*Hoplocephalus curtus*) from Australia, deposited; an Eland (*Oreos canna*, ♂) bred in the Gardens.

OUR ASTRONOMICAL COLUMN.

PERRINE'S COMET (1895).—Some interesting photographs of Perrine's comet were taken at Prague by J. and J. Fric, during its appearance in November last (*Acad. Sci. de l'Emp. Fr. Jos.*, 1896). One of the photographs was taken on November 23 with an exposure of thirty minutes, and another a week later with an exposure of twenty minutes. The nucleus resembles an ordinary star in both cases. The tail proceeds from the head in the form of a fan opened out to about 30°, and is clearly divided into two parts. In the first photograph the northern part of this double tail is curved, and has a length of about 30', while the other is straight, and can be traced through about 3½', the width being about 5'. Notwithstanding the shorter exposure of the second photograph, both tails are extended, the curved one being 50' in length, and the other very nearly 7". The principal tail is only 3' wide for the first degree of its length, but it suddenly widens out and forms a band 10' broad. We seem to have here the long straight "hydrogen" tail and the strongly-bent "iron" tail which Bredichin's theory attempts to explain.

Photographs taken at the Lick Observatory also exhibit the double tail, and Prof. Campbell's observations show that the spectrum of the comet was one consisting of carbon bands. The comet is still visible, and rises some hours before the sun. Dr.